

Mr. Byrne, who has seen *Zeus* alive at Plymouth, informs me that it does not live well in an aquarium and has not been observed to "sleep," but that it swims in a lop-sided fashion, at any rate in captivity, and also seems to use the soft dorsal and anal fins as organs of propulsion, moving them in waves, much as a needle-fish does.

XLIII.—*A new Arrangement of the existing Species of Equidæ, with the Description of a new Subspecies of "Zebra."* By R. I. POCOCK.

It is customary to classify existing Equidæ as Horses, Asses, and Zebras.

The genus *Equus*, Linn. (Syst. Nat. ed. x. 1766), originally contained *E. caballus* (the domestic horse), *E. asinus* (the domestic ass), and *E. zebra* (the mountain zebra, with which Linnæus included the quagga).

In 1825 Gray (Zool. Journ. i. p. 241) established the genus *Asinus* for *E. vulgaris* (= *asinus*), *E. zebra*, *E. quagga*, and *E. Burchelli*. In other words, he divided the Equidæ into "Horses" and "Asses."

Hamilton Smith went a step further, and removed from Gray's genus *Asinus*, under the name *Hippotigris*, *H. zebra*, *H. quagga*, *H. Burchelli*, and added *H. antiquorum*, leaving *Asinus* for the African and Asiatic species of wild ass (Nat. Libr., Mamm. i. pp. 350-351). This classification expresses in technical language the prevalent notion as to the affinities of the species included, although generic value has been seldom accorded to the three groups. It was adopted nevertheless by Trouessart in 1898 (Cat. Mamm. ii.), *E. Grevyi* and a number of subspecific forms of *E. Burchelli* being included under *Hippotigris*.

Zebra is no doubt a convenient vernacular term for the striped as opposed to the unstriped species of Equidæ; but its technical equivalent *Hippotigris*, in the broad sense used by Hamilton Smith and the still broader application given to it by Trouessart, cannot, I think, be maintained as symbolizing a natural unit.

There is a mass of evidence favouring the view that the ancestors of *Equus* were striped. In that case the stripes of "zebras" are a heritage from a common ancestor. To that extent only are they a sign of affinity between the species which possess them. They have been retained where the physical conditions required their retention for purposes of

concealment, and lost where their suppression was demanded for the same object. Their slight systematic importance is shown by their extreme variation within the limits of the group termed "Burchell's zebras"—a group composed of forms admittedly related to one another. Their disappearance in such forms as the African "asses" (*E. tæniopus* and *somaliensis*) and Asiatic "asses" (*E. hemionus*, *onager*, and *hemippus*) is in itself no proof of kinship close enough to justify the union of these two sections of the Equidæ into a group equivalent to one embracing the striped species.

The stripes of the Equidæ in fact appear to be strictly comparable to the stripes or spots of the Felidæ and to have much the same taxonomic value. No one, presumably, would feel justified in establishing a genus for the tawny or fawn-coloured cats, like the lion, puma, caracal, jaguarundi, &c., on the strength of their uniform coloration, and another for those species of *Felis* in which the primitive variegated markings persist.

Rejecting, then, for these reasons the suppression or retention of body-stripes as a basis for the classification of those existing species of Equidæ which have warts only on the fore legs, a short erect mane, and a tufted tail, I think these species may be classified under the following headings:—

1. GRÉVY'S ZEBRAS (*Equus Grevyi*).—One species with the two subspecies described below.

That Grévy's zebra stands apart from the other striped species has been already pointed out (Ann. & Mag. Nat. Hist. (6) xx. pp. 48-49, 1897). The arrangement of stripes on the hind-quarters is unique; the warts on the fore legs are abnormally small, and the extension of the mane over the withers sharply differentiates this species from those of the following section, to which *E. Grevyi* is commonly supposed to be nearly related. Lastly, the widely expanded rounded ear is quite peculiar and contrasts forcibly with the longer or shorter, but narrow, fusiform, and pointed ear of other Equidæ.

2. AFRICAN WILD ASSES and MOUNTAIN ZEBRAS (*Asinus*).

- a. *E. asinus*.

- a. Subsp. *tæniopus*.

- β. " *somaliensis*.

- b. *E. zebra*.

- a. Typical subspecies.

- β. Subsp. *Hartmannæ*.

- γ. " *Penricei*.

} Perhaps identical.

Apart from the retention of the stripes and the unique character of the reversal of the spinal hairs, the mountain zebras seem to differ but little from the African wild asses. In general form, shape of head, length of ear, and narrowness of hoof the two species are strikingly alike. As contrasted with what obtains in the following group, there is a marked tendency of the stripes to persist upon the legs in the species that have lost them on the body.

3. QUAGGAS (*Hippotigris*).—One species (*E. quagga*), with many subspecies.

a. Typical subspecies, now extinct.

β. Subsp. *Burchelli*.

γ. " *antiquorum*.

δ. " *Wahlbergi*.

ε. " *Chopmani*.

ζ. " *Selousi*.

η. " *Crawshayi*.

θ. " *Granti*.

etc., etc.

The validity of this group must, I think, be admitted. The true quagga is generally set apart as an isolated species, displaying less similarity to Burchell's zebra than the latter shows to the mountain zebra. Judging, however, from extant figures and the few specimens of *E. quagga* preserved in museums, considerable individual variation was exhibited in the extent to which the stripes on the flanks and hind-quarters were suppressed. Even in the extremest cases of suppression the difference between *E. quagga* and the typical *E. Burchelli* is less pronounced than that between the latter and the subspecies known as *Crawshayi* or *Granti**.

The quaggas furnish an admirable object-lesson in subspecific forms. Broadly speaking, the most fully striped forms occur to the north of the Zambesi, both Grant's quagga, which inhabits Southern Abyssinia and British East Africa, and Crawshay's quagga, from British Central Africa (Nyasa-land), being strongly striped to the hoofs and banded to the middle line on the belly. Nearest to these comes Selous's quagga, from Mashonaland, which, however, has paler narrow intermediate stripes, at least on the hind-quarters. From this

* The adoption of the term "quagga" for this group will be followed by the advantage of enabling us to speak of these subspecies as Crawshay's or Grant's quagga, instead of Crawshay's Burchell's zebra, Grant's Burchell's zebra, &c.

form a complete series of gradations may be found in which the stripes gradually die away from the hoofs upwards, ultimately leaving the belly, legs, and hind-quarters up to the last flank-stripe unstriped. This suppression of stripes on the limbs and belly is accompanied by an increase in the number and forward extension of the shadow-stripes, the consummation in both particulars being reached, so far as existing types are concerned, in Burchell's quagga. In the true, but now extinct, quagga the process was carried one step further, the stripes being suppressed over the quarters, and the shadow-stripes, at least apparently in some cases, showing a great increase in development, the result being a more uniform coloration of the fore part of the body and head. It would be extremely interesting to discover why these quaggas, as they passed from north to south in Africa, found it advantageous to drop the stripes on their limbs and hind-quarters. The answer to this question could probably be given by a careful study of the physical conditions under which each subspecies exists.

4. ASIATIC WILD ASSES (? *Equus*, s. s.).—Certainly one well-marked species, *E. hemionus*, with the subspecies *onager* and *hemippus*. Possibly the Horses should be here included, if *E. Przevalskii* be a valid species.

As the quaggas are the most equine of the "zebras," so the kiang is the most equine of the "asses."

The question as to whether there is a genuine wild species of true horse is still *sub judice*. If the verdict be adverse, the horse as a domesticated animal, artificially modified to an unknown extent, has no place in a system dealing with existing species. Assuming for the moment that Przevalski's horse is not feral and not a hybrid, it must take its place at the end of the series given above, probably, I think, as a second species under section 4.

In the specimens of this animal in the Zoological Gardens, as in the original type, the hairs on the basal half of the tail are much shorter than those at the end. The tail, in fact, presents an intermediate stage between that of *E. caballus* and of *E. hemionus*. Similarly, the mane of the kiang exhibited in the Gardens is almost as much "equine" as "asinine" in character. Moreover, considering the extent to which the warts on the hind legs vary in size in domesticated horses, it would be rash to give more than a specific value to their presence.

Finally, if the kiang be united to the true horses, as proposed by Mr. Lydekker*, it will be seen that of the four groups into which the existing Equidæ fall three have received generic names. If in the future these be restored to use, a fourth name must be given to *E. Grevyi*, which is perhaps the best-marked type of all; and I am inclined to think that if the genus *Equus* be subdivided, a classification which placed *E. Grevyi* in one category and the rest of the species in another would not be far wide of the mark.

The original example of Grévy's zebra was sent from Abyssinia by the Emperor Menelik to the then President of the French Republic, after whom it was named by Oustalet ('La Nature,' x. p. 12, 1882). Specimens of apparently the same species were subsequently received in this country from Somaliland, and were unquestionably considered to be identical with the Abyssinian form, of which no topotypical examples were available for comparison. Within the last few years, however, several living Abyssinian specimens, presented by Menelik to our English Sovereigns, have been exhibited in the Gardens of the Zoological Society. These zebras differ strikingly from those obtained in Somaliland which have been sent to the British Museum in their staring black-and-white coloration.

That the type of the species upon its arrival in Paris resembled the specimens afterwards sent by Menelik to this country is attested by Oustalet's description of the stripes as "purple-brown tending to black, standing boldly out on a white ground scarcely washed with grey."

Since, then, the available evidence points to a constant difference in coloration between the Abyssinian and Somali Grévy's zebras, the latter must be regarded as a distinct subspecies †.

The two may be diagnosed and contrasted as follows:—

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| <p>a. Stripes black, interspaces white and of approximately the same tone as the white of the belly</p> <p>b. Stripes dark brown, interspaces washed with ochre-brown and very noticeably darker than the white of the belly</p> | <p>Typical subspecies.</p> <p>Subsp. <i>berberensis</i>, nov.</p> |
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The type of *E. Grevyi berberensis* is the skin of a specimen shot by Capt. Swayne at Duhri, Ogardain (B.M. Reg. 94. 2. 21-1).

* 'Nature,' vol. lxy. pp. 103 & 104 (1901).

† A form of Grévy's zebra from Lake Rudolf has been described by Dr. P. Matschie (SB. Ges. naturfor. Berlin, 1898, pp. 169 & 180) as *Equus Fawrei*. See also Camerano, Atti Acc. Torino, vol. xxvii. 1902, where another form of "quagga" is described as *E. Chapmani jalle*.